SAN JOSÉ STATE UNIVERSITY

Biomedical Engineering

Master of Science in Biomedical Engineering

Orientation

Winter 2021

Topics

- MS-BME Program Educational Objectives
- Curriculum Requirements
  - Transition courses
  - MS-BME core and elective courses
  - English Competency Requirement
  - MS Thesis/Project Options
- Advising
  - Sources of information
  - Forms, templates and instructions

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Checklist for MS Degree

MS-BME degree Checklist - November 2019.pdf

Biomedical Engineering Department
College of Engineering, San José State University
One Washington Square, San Jose, CA 95192-0080
Tel: (408) 924-4000

Checklist for Completing the M.S. Biomedical Engineering Degree

In addition to the items listed in this Checklist, please also visit the Graduate Admissions and Program Evaluations Office's website at:

http://www.sjsu.edu/gape/current_students/completing_masters/

It provides a comprehensive listing of the university requirements you have to meet in order to complete your MS degree.

Important note before you begin reading further:

Keep a photocopy of all documents that you submit to the university!

Program Educational Objectives

- **Program Educational Objectives** are defined as career and professional **accomplishments** that are to be **achieved within the first few years of graduation**.

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Program Educational Objectives

- Our MS-BME Program is designed to produce graduates who are prepared to:

1. Are able to solve complex engineering problems and tasks, and use engineering, science and statistics principles to justify recommendations.
2. Are able to evaluate the impact of their work on society, including ethical, economic, global and environmental aspects.
3. Can deliver effective presentations of engineering results in written and oral formats.
4. Have life-long learning skills and are able to apply their engineering knowledge to critically evaluate relevant literature and new technologies or systems.
5. Are effective leaders, capable of working in diverse environments.
6. Are able to apply their engineering education to a variety of career paths.

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Succeeding in our Program

- Curriculum Requirements
- Explore new areas, innovate
- Participate in BMES initiatives
  - Annual Biomedical Device Conference
  - Peer mentoring
  - Industry field trip
  - Social events
  - Hiking, volleyball

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MS Program features

- Diverse
  - Full time students
  - Working professionals
- Interdisciplinary
- Integrates skill sets necessary for professional success into curriculum

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MS program

Curriculum Requirements

Entry requirements

- B.S. in engineering, physics, chemistry, biology

- *If* undergrad GPA > 3.00
  then GRE not required
  else GRE: > 315 (Sections 1, 2) + 3.5 (Section 3)

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Program requirements

- Maintain GPA > 3.0 in all coursework
  - Lower division courses do not count towards GPA
- Courses for MS degree must be C or better
- 30 semester units of **approved** courses
- Meet university's English proficiency requirement
- Complete Thesis/Project Proposal Examination (BME 291)
- Complete Thesis/Project Defense
- Submit written Thesis or Project Report

- Note: **there is a 7-year limit on course validity.**

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Curriculum Overview

- Transition courses → Engineering, math, science, biology fundamentals
- BME Core → BME breadth
- BME electives
- Thesis/Project

} → BME depth

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Transition courses: lower division

- BME 65* Biomedical Applications of Statics
- BME 68* Biomedical Applications of Metals and Ceramics
- EE 98* Introduction to Circuit Analysis
- Chem 1A* General Chemistry
- Chem 1B* General Chemistry

} 1 year of Chemistry

- Phy 50* General Physics
- Phy 51* General Physics

} 1 year of Physics

- Math 33A (or 33LA)* Ordinary Differential Equations (& Linear Algebra)

* *Lower Division classes can be taken at community colleges*

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Transition courses: upper division classes

- BME 115 Foundations of Biomedical Engineering
- BME 147 Quantitative and Statistical Methods in BME
- BME 165 Introduction to Engineering Biomechanics

- **Enrolling in Transition Courses**
  - **Enroll as soon as possible** to make sure you have a space
  - Follow directions sent out by BME Advisor
    - Mechanism to enroll in each class is slightly different
  - ***Not taking Transition Courses in a timely manner will delay your progress towards your degree***

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Change of classification

- As long as you still have transition courses to complete, you will have a **conditionally classified standing**.

- Once you complete all your transition courses with B or better, you can change your classification to **classified standing**.
  - You initiate the process by submitting a **Change of Classification form** to the Graduate Advisor.

- ***Note***: having a classified standing (without condition) is a prerequisite to start your MS project/thesis.

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BME core

- BME 207: Experimental Methods in BME
- BME 210: Mathematical Methods in BME
- BME 272: Medical Device Design & Principles
- BME 274: Regulatory, Clinical and Manufacturing Aspects of Medical Devices
- BME 177: Physiology for Engineers*
- BME 291: Project/Thesis Preparation Seminar

* Starting in Fall 2021, BME 177 will be replaced with BME 276: Project Management in Biomedical Technologies

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BME electives

- BME 182: Prosthetics and Orthotics
- BME 187: Medical Device Quality Systems
- BME 188: Biomedical Manufacturing Methods
- BME 217: Experimental and Computational Biofluid Mechanics
- BME 254: Microscale Biomedical Systems
- BME 256: Biomedical Applications of Nanoplatforms
- BME 258: Biomedical Imaging
- ME 267: Engineering Biomechanics
- BME 272: Biomedical Device Design and Principles
- BME 288: Tissue Engineering

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Maximum nine (9) units of 100-level courses

English Competency Requirement

- University requirement: *all graduate students must demonstrate competency in written English.*

- Starting from Fall 2020, the English Competency Requirement is satisfied by completing either one of the following courses:
  - BME 207: Experimental Methods in BME
  - BME 274: Regulatory, Clinical and Manufacturing Aspects of Medical Devices

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MS Thesis/Project Options

- **Project** option:

• BME Core:	15 units		
• BME Electives:	12 units	(4 classes)	
• BME 291:	1 unit	MS Thesis/Project Preparation Seminar	+
• BME 298:	2 units	MS Project	+
			+
	30 units		=

- **Thesis** option:

• BME Core:	15 units		
• BME Electives:	9 units	(3 classes)	
• BME 291:	1 unit	MS Thesis/Project Preparation Seminar	+
• BME 298:	2 units	MS Project	+
• BME 299:	3 units	MS Thesis	+
			+
	30 units		=

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Recommended Class Sequence

- Transition Courses
- BME Core
- BME 291 + Electives
- Project/Thesis (BME 298/299)

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Prerequisites for BME 291

- **All** Transition Courses completed
- Change of Classification form filed
- English Competency Requirement satisfied
- Minimum 9 units towards MS degree
- Candidacy form filed
- Good academic standing - GPA > 3.0
- Thesis/Project topic and advisor identified

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MS program

Advising

Graduate advising hold

- Advising is mandatory every semester.
- Every semester, an advising hold will prevent you from registering for classes without approval from your undergraduate advisor.

- How do I remove my advising hold?
  - You meet with your undergraduate advisor
  - Discuss your plan for the following semester, summarized in your **advising form**
  - Have your advising form approved and signed by your advisor

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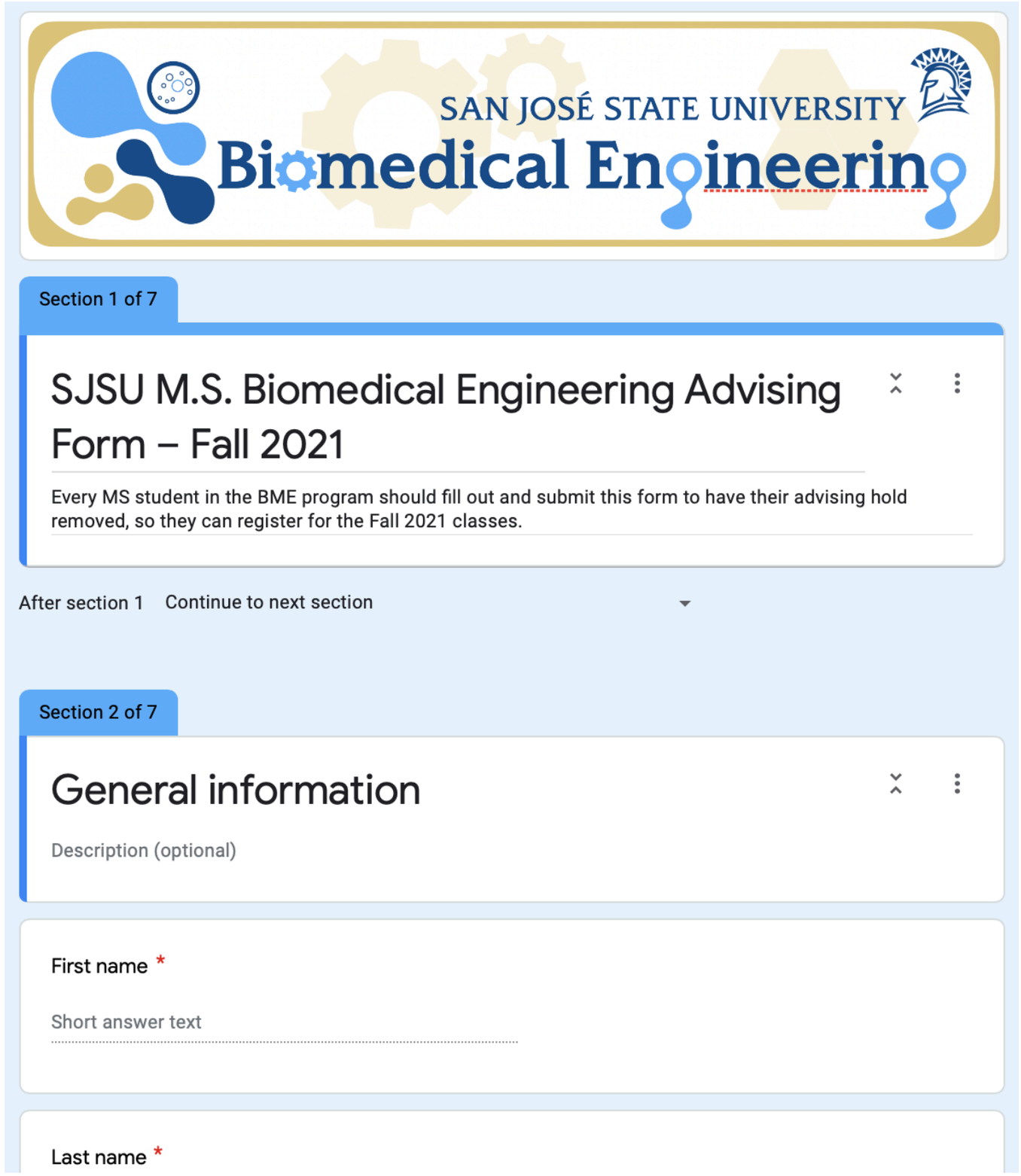
Graduate advising form (via Google forms)

- Starting from Spring 2021, the advising form is available via Google form:
  - Advising form for Fall 2021

click here

- The form will guide you to:
  - recap the status of your transition, core and elective courses, as well as your MS project/thesis;
  - plan your courses for the next semester



Removing Conditionally Classified standing

- As soon as you have completed all of your Transition Courses, you will have to transfer from Conditionally Classified standing to Classified standing.

- Fill out the Change of Classification form.
- Send to Graduate Coordinator.

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Change of Classification in Graduate Program

Instructions **Do not hand write - Must be typed**

This form should be filled out by the master's committee chair or graduate advisor. It is to be used only for students currently enrolled who have met the conditions specified by their program at the time of their admission. The signature of the chair or advisor indicates that the student should be transferred into an (unconditionally) classified status. This completed form should be emailed to the appropriate GAPE evaluator (see www.sjsu.edu/gape/about_us/staff), submitted to Window G in the Student Services Center, or sent through interoffice mail to extended zip 0017.

Student Information

Last Name | First Name, M.I.

Student ID | Previous Name, if any

Current Address | City | State | Zip

Daytime Phone | Email Address

Program Information

Program (major/concentration, if applicable)

Student was admitted as a **conditionally classified** student needing to meet the following conditions:

1.
2.
3.
4.
5.
6.
7.

List here the transition courses taken, with semester and grade.

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Petition for Advancement to Graduate Candidacy

- a.k.a. **Candidacy form**
- Before you can submit your candidacy form, you must have:
  - Completed all Transition Courses
  - Changed your Classification to Classified standing
  - Completed a minimum of 9 200-level units
  - No more than 9 units of 100-level classes
  - Completed the University's English proficiency requirement

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Petition for Advancement to Graduate Candidacy
09.2016

Student Information

Completed form should be emailed to the appropriate GAPE evaluator (see www.sjsu.edu/gape/about_us/staff), submitted to Window G in the Student Services Center, or sent through interoffice mail to extended zip 0017.

Last Name _____ First Name _____

Student ID _____ Previous Name (if any) _____

Current Address _____ City _____ State _____ Zip _____

Daytime Phone _____ Email Address _____

Degree Information

Degree Sought,*e.g.* , MBA _____ Major _____ Concentration, if applicable _____

Means of satisfying Graduation Writing Assessment Requirement: Course Prefix, Catalog No. _____

University where taken _____ Semester/Year GWAR Completed _____ Plan A B C

Proposed Graduate Degree Program

A. Courses (include all SJSU courses taken and those that will be taken for degree credit; leave Grade section blank for current and future classes.)

Course Prefix/No.	Title	Semester Units	Grade	Semester/Year Completed

B. Culminating Experience

Check box if applicable and then fill out corresponding row

	Course Prefix/Catalog No. (*e.g.*, MAS 203)	Total Units	Grade	Semester/Year Completed
299 Thesis (Plan A)/Creative Work (Plan C)				
Last completed project or comprehensive exam-preparation course (plan B)				

Other Culminating Experiences	Type	Semester/Year Completed
1) Other culminating experience		
2) Other culminating experience		

Course Prefix/Catalog No. (*e.g.*, MAS 203) Total Units Grade Semester/Year Completed

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Petition for Advancement to Graduate Candidacy

- The form must be filed at least one year before graduation and before beginning BME 291.
- **List only courses to be counted towards MS degree**
  - Do not include Transition Courses or Engr 200W
  - Enter classes in appropriate categories
- **The total number of units must add up to 30**, with GPA > 3.0
- Your grade in each course must be C or better
- Fill out the Change of Classification form, and send to Graduate Coordinator.

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Course Substitution Form

- This form must be submitted if you are changing one or more of the courses listed in your approved Candidacy form.
- There is a dedicated form for core course substitutions and one for elective course substitutions (example shown here).
- List course(s) to be dropped and course(s) to be added.

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Request for Elective Course Substitution for the Graduate Degree

Instructions — **Do not hand write - Must be typed**

Use this form to substitute an elective course that has not been taken and graded on an approved candidacy form. Graded course(s) cannot be dropped from the candidacy form. Substitution of core courses requires a department chair signature. Please use the Request for Core Course Substitution form.

Student Information

Last Name | First Name, M.I.

Student ID | Previous Name, if any

Major

Course to be Dropped

Course Prefix and Catalog No. (e.g., Biol 234)

Course Title | Units | Semester/Year

Course Prefix and Catalog No.

Course Title | Units | Semester/Year

Course to be Added

Institution (University) if not taken at SJSU:

Note: If course is taken elsewhere, official transcripts must be on file at the GAPE office. A copy of the official transcripts or the unofficial transcripts can be submitted to the graduate advisor

Location of Institution above (City, State, Country)

Course Prefix and Catalog No.

Course Title | Units | Semester/Year

Course Prefix and Catalog No.

Course Title | Units | Semester/Year

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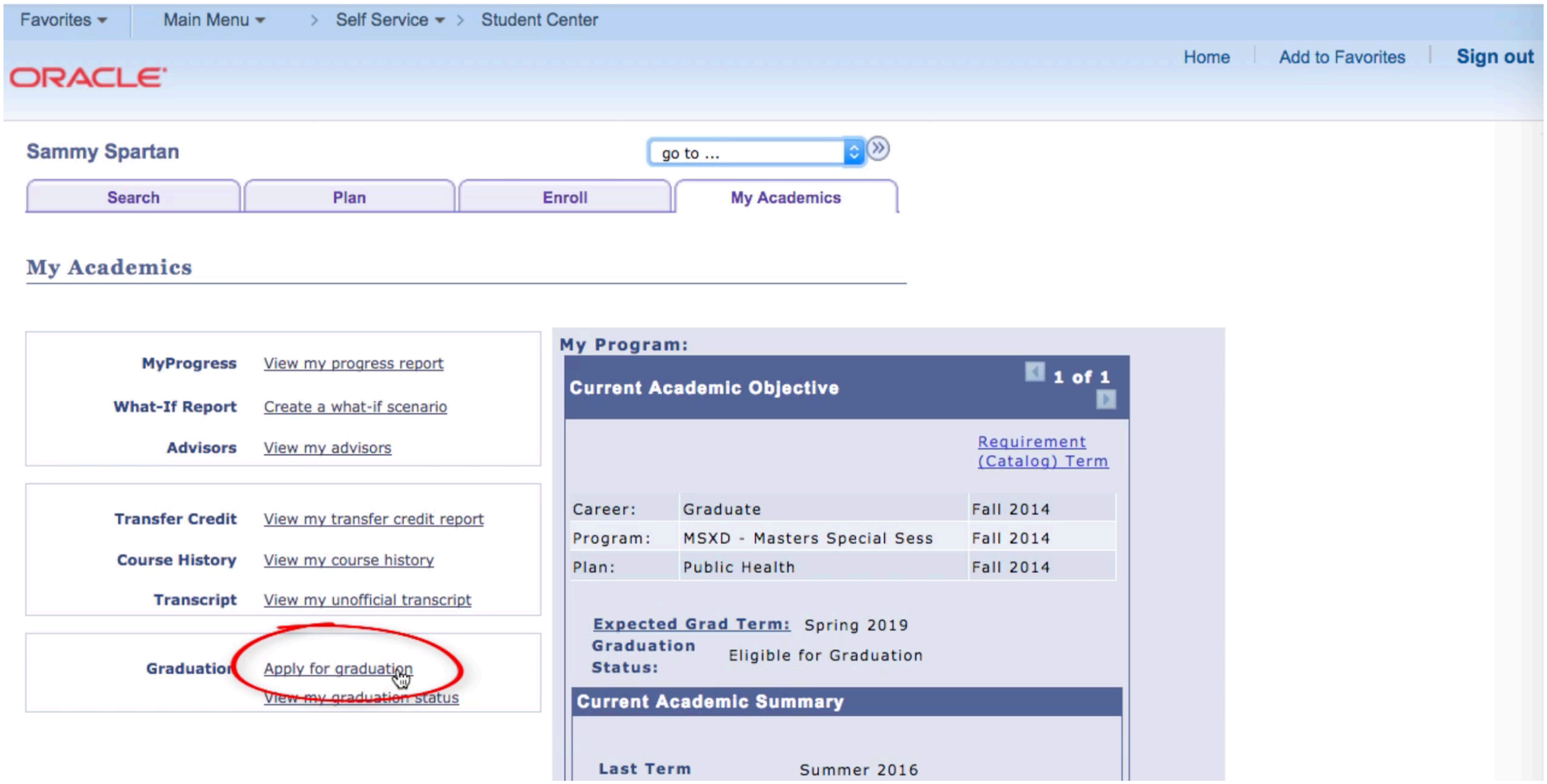
Application for Graduation

- Must be submitted at least two semesters ahead
  - Master's Students Apply for Graduation Online:
    Link to instructions on YouTube:



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Verification of Culminating Experience

- To be filled out and filed after
  - thesis/project defense completed, AND
  - written report/thesis submitted and approved, AND
  - your BME 298 (and 299) grade has been converted to CR, AND
  - all other requirements for the MS degree have been met.

- *The Graduate Coordinator fills out and submits this form upon verification from project/thesis advisor that all requirements have been completed.*

- **You will not graduate until this form is submitted.**

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Forms, templates, instructions

- All forms issued by Graduate Studies Office can be found at http://www.sjsu.edu/gape/forms
  - Try there first, and in case you can't find the form you need, contact the Graduate Coordinator
- All forms must be submitted electronically.
- Read the instructions on the forms carefully.
- Keep copies of all paperwork submitted.

- Templates with detailed instructions are available for:
  - advising form
  - candidacy form

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Student Rights & Responsibilities

- Rights
  - Fair grading – demand it!
  - Access to records (only your own)
  - Office hours – use it!
- Responsibilities
  - Academic honesty
    - no cheating, no plagiarism
    - do not give or receive unauthorized assistance

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Important dates: Spring 2021

SPRING 2021

Friday	*January 1*	*New Year's Day - Campus Closed **(N)***
Monday	*January 18*	*Dr. Martin Luther King, Jr. Day - Campus Closed **(K)***
Monday	January 25	Spring Semester Begins
Monday-Tuesday	January 25-26	Pre-Instruction Activities: Faculty Orientation, Advisement, Faculty Meetings and Conferences **(P)**
Wednesday	January 27	First Day of Instruction – Classes Begin
Monday	February 8	Last Day to Drop Courses Without an Entry on Student's Permanent Record **(D)**
Monday	February 15	Last Day to Add Courses & Register Late **(A)**
Tuesday	February 23	Enrollment Census Date **(CD)**
Monday - Friday	March 29-April 2	Spring Recess ***(*SPRING RECESS*)***
Wednesday	*March 31*	*Cesar Chavez Day (Observed) - Campus Closed **(CC)***
Monday	May 17	Last Day of Instruction – Last Day of Classes
Tuesday	May 18	Study/Conference Day (no classes or exams) **(SC)**
Wednesday - Friday	May 19-21	Final Examinations ***(exams)***
Monday - Tuesday	May 24-25	Final Examinations ***(exams)***
Wednesday	May 26	Final Examinations Make-Up Day **(MU)**
Thursday	May 27	Grade Evaluation Day **(E)**
Friday	May 28	Grades Due From Faculty **(G)**
Friday	May 28	End of Academic Year - End of Spring Semester
Wednesday-Friday	May 26-28	Commencement **(C)**
Monday	*May 31*	*Memorial Day - Campus Closed **(M)***

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Spring 2021 Biomedical Engineering Courses @ SJSU

San José State University

Course #	Course Title	Units	Days	Times	Location
BME 065	Biomedical Applications of Statics	2	TR	1630 - 1720	Online
BME 115	Foundations of BME*	4	TR	1500 - 1620	Online + Labs*
BME 117	Biotransport Phenomena	3	TR	1330 - 1445	Online
BME 133	Programming Applications in BME	1	F	1800 - 2045	Online
BME 165	Applied Engineering Biomechanics	3	MW	1500 - 1620	Online
BME 174	Biomedical Regulatory Requirements	3	MW	1630 - 1745	Online
BME 177	Physiology for Engineers*	3	MW	1500 - 1550	Online + Labs*
BME 178	Biomedical Product Realization	3	MW	1330 - 1445	Online
BME 180	Individual Studies	1	TBA	TBA	TBA
BME 182	Orthotics and Prosthetics	3	R	1800 - 2045	Online
BME 198B	Senior Project 2*	2	F	0930-1020	Online + Labs*
BME 210	Mathematical Methods in Biomedical Engineering	3	TW	1800 - 1920	Online
BME 272	Biomedical Device Design and Principles	3	M	1800 - 2045	Online
BME 291	Master's Thesis/Project Preparation Seminar	1	F	1500 - 1800	Online
BME 298	Master's Project	1-2	F	1800 - 1940	Online
BME 299	Master's Thesis	3	F	1800 - 2045	Online

* Check for lab Schedule. Some labs may meet in person on campus.

100-level classes are undergraduate classes; 200-level classes are graduate classes.
Undergraduates may take 200-level classes with instructor approval.
Individuals not matriculated at SJSU may be able to take these classes through SJSU Open University on a space available basis and instructor approval.
Please contact Prof. Guna Selvaduray (guna.selvaduray@sjsu.edu), Chair of the Biomedical Engineering Department, for further information.

Fall 2021 Biomedical Engineering Courses @ SJSU

Course #	Course Title	Units	Days	Times	Location
BME 25	Introduction to BME Design*	3	TBD	TBD	TBD
BME 68	BME Applications of Metals & Ceramics	3	TBD	TBD	TBD
BME 115	Foundations of BME*	4	TBD	TBD	TBD
BME 117	Biotransport Phenomena	3	TBD	TBD	TBD
BME 130	Numerical Methods in BME*	3	TBD	TBD	TBD
BME 135	Biomedical Engineering Design Methods*	2	TBD	TBD	TBD
BME 147	Quantitative & Statistical Methods for BME	3	TBD	TBD	TBD
BME 165	Applied Engineering Biomechanics	3	TBD	TBD	TBD
BME 168	Medical/Biological Polymers*	3	TBD	TBD	TBD
BME 177	Physiology for Engineers*	3	TBD	TBD	TBD
BME 180	Individual Studies	1-3	-	-	-
BME 187	Medical Device Quality Systems	3	TBD	TBD	TBD
BME 188	Biomedical Device Manufacturing	3	TBD	TBD	TBD
BME 198A	Senior Project I*	2	TBD	TBD	TBD
BME 207	Experimental Methods in BME*	3	TBD	TBD	TBD
BME 274	Regul., Clinical and Manuf. Aspects of Medical Devices	3	TBD	TBD	TBD
BME 276	Project Management in Biomedical Technologies	3	TBD	TBD	TBD
BME 217	Experimental and Computational Biofluid Mechanics	3	TBD	TBD	TBD
BME 256	Biomedical Applications of Nanoplatforms	3	TBD	TBD	TBD
BME 288	Tissue Engineering	3	TBD	TBD	TBD
BME 280	Graduate Research Studies	1-3	-	-	-
BME 291	Master's Thesis/Project Preparation Seminar	1	TBD	TBD	TBD
BME 298	Master's Project	2	TBD	TBD	TBD
BME 299	Master's Thesis	3	TBD	TBD	TBD

* Check for lab Schedule

100-level classes are undergraduate classes. Please contact Dr. Guna Selvaduray, (guna.selvaduray@sjsu.edu), BME Department Chair, for further information.

200-level classes are graduate classes. Please contact Dr. Alessandro Bellofiore, (alessandro.bellofiore@sjsu.edu), BME Graduate Advisor, for further information.